

USAWC STRATEGY RESEARCH PROJECT

STRATEGIC AIR MOBILITY: MEETING THE DEMANDS OF THE 21ST CENTURY

by

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The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.

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| REPORT DOCUMENTATION PAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                                                          |                                                                                       | Form Approved OMB No.<br>0704-0188                                          |  |
| Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS. |                             |                                                          |                                                                                       |                                                                             |  |
| 1. REPORT DATE (DD-MM-YYYY)<br>07-04-2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             | 2. REPORT TYPE                                           |                                                                                       | 3. DATES COVERED (FROM - TO)<br>xx-xx-2002 to xx-xx-2003                    |  |
| 4. TITLE AND SUBTITLE<br>Strategic Air Mobility: Meeting the Demands of the 21st Century<br>Unclassified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                                                          |                                                                                       | 5a. CONTRACT NUMBER                                                         |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       | 5b. GRANT NUMBER                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       | 5c. PROGRAM ELEMENT NUMBER                                                  |  |
| 6. AUTHOR(S)<br>Eisenhut, Joey A. ; Author                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                                                          |                                                                                       | 5d. PROJECT NUMBER                                                          |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       | 5e. TASK NUMBER                                                             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       | 5f. WORK UNIT NUMBER                                                        |  |
| 7. PERFORMING ORGANIZATION NAME AND ADDRESS<br>U.S. Army War College<br>Carlisle Barracks<br>Carlisle, PA17013-5050                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                                                          |                                                                                       | 8. PERFORMING ORGANIZATION REPORT<br>NUMBER                                 |  |
| 9. SPONSORING/MONITORING AGENCY NAME AND ADDRESS<br>,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                                                          |                                                                                       | 10. SPONSOR/MONITOR'S ACRONYM(S)                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       | 11. SPONSOR/MONITOR'S REPORT<br>NUMBER(S)                                   |  |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT<br>APUBLIC RELEASE<br>,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       |                                                                             |  |
| 13. SUPPLEMENTARY NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                                                          |                                                                                       |                                                                             |  |
| 14. ABSTRACT<br>See attached file.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                                                          |                                                                                       |                                                                             |  |
| 15. SUBJECT TERMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                                                          |                                                                                       |                                                                             |  |
| 16. SECURITY CLASSIFICATION OF:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             | 17. LIMITATION<br>OF ABSTRACT<br>Same as Report<br>(SAR) | 18.<br>NUMBER<br>OF PAGES<br>28                                                       | 19. NAME OF RESPONSIBLE PERSON<br>Rife, Dave<br>RifeD@awc.carlisle.army.mil |  |
| a. REPORT<br>Unclassified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | b. ABSTRACT<br>Unclassified | c. THIS PAGE<br>Unclassified                             | 19b. TELEPHONE NUMBER<br>International Area Code<br>Area Code Telephone Number<br>DSN |                                                                             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                                                          |                                                                                       | Standard Form 298 (Rev. 8-98)<br>Prescribed by ANSI Std Z39.18              |  |



## ABSTRACT

AUTHOR: Lt Col Joey A. Eisenhut

TITLE: Strategic Air Mobility: Meeting the Demands of the 21st Century

FORMAT: Strategy Research Project

DATE: 07 April 2003      PAGES: 28      CLASSIFICATION: Unclassified

This project examines the current Strategic Air Mobility policy and the associated strategic deployment challenges to that policy. The current policy analysis is provided to determine if it is the answer to the problems and issues facing our strategic mobility forces (specifically those provided by the United States Air Force's Air Mobility Command). A background of strategic lift is provided to set the stage for our current policy as well as what our future policy ought to be or the direction our policy should be heading. Finally, the project identifies and examines the significant challenges for the future and how our current strategic air mobility decisions are affecting our ability to meet those challenges.



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## **STRATEGIC AIR MOBILITY: MEETING THE DEMANDS OF THE 21<sup>ST</sup> CENTURY**

The man who is too set to change is dead already. The funeral is a mere detail.

—Henry Ford

### **PURPOSE**

No policy is static. All policies, whether in the household, a business, or the United States government, are subject to review and revision. This paper will deal with our nation's view of strategic airlift and its posture to support our current National Security Strategy with a focus on Army transformation. Transformation of our military is at the forefront of our national policy. President Bush states in his National Security Strategy that we will, "continue to transform our military forces to ensure our ability to conduct rapid and precise operations to achieve decisive results."<sup>1</sup> Is airlift and its use policy set to support the future of the United States military deployment and war fighting in the 21<sup>st</sup> Century and the President's stated strategy? To answer these questions, this paper will begin with a review of airlift and force enhancers since the end of World War II. Next, it will discuss the air mobility system, to include the four tenets of airlift, sizing of the airlift force and strategic airlift customers. Following that will be a review of our current deployment challenges. Additionally, the Army's role will be discussed. They are a critical cog in the United States' ability to move the force. The Army is the largest user of airlift in any contingency. This paper will discuss briefly if their efforts at transforming to a lighter, more deployable force will relieve or stress strategic airlift. The discussion of deployment challenges will continue with others competing for lift and the current strategic fleet capability. An analysis of the current policies will follow with possible courses of action or options. The paper will conclude with a recommendation for the future relating to the use of strategic air mobility in our transformed military.

Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.

—Guilio Douhet

## **BACKGROUND**

Strategic airlift is not glamorous. As such, the emphasis in the United States Air Force has always been on missions in which things are shot or bombed. This emphasis, however, is not misplaced. Aircraft that deliver weapons on target are critical to the success of modern warfare. Airlift has always been treated as an auxiliary capability.<sup>2</sup> It is seen as not contributing directly to air superiority or strategic bombing. This is probably due in part to the tie to the logistical effort. The air mobility mission has been the most flexible area of air force airpower since World War II. The military is a tool to help further national defense and diplomatic objectives of its nation. Fighter and bombers are precise tools for use in limited scenarios. Strategic airlift can be, and is, used in all scenarios across the spectrum of conflict for the daily execution of national policy.<sup>3</sup> Most United States strike aircraft have utility in combat environments, while military airlift is essential in both peacetime and combat scenarios. Military airlift has sustained troops overseas, projected power to Korea, Vietnam, Latin America, Southwest Asia and the Middle East. It has been used for the movement of diplomats and foreign advisors, and the conduct of all types of airlift missions ranging from humanitarian to foreign relations. Despite the unglamorous nature of air mobility, its value to the United States is priceless. So much so that General Henry Shelton, former Chairman of the Joint Chiefs of Staff said, "Try fighting without us [air mobility]."<sup>4</sup>

## **EMERGENCE OF STRATEGIC MILITARY AIRLIFT**

### **BERLIN AIRLIFT**

The first time airlift was brought to bear as an instrument of national policy was in dramatic fashion...during the blockade of Berlin. The initial requirement for the resupply of Berlin was estimated at 4,500 tons of coal and food every day. Few believed airlift could deliver. To gain an understanding of the scope of the task in 1948, American crews delivered 80 tons on 32 C-47s.<sup>5</sup> Brigadier General Joseph Smith, Airlift Task Force Commander, realized this was insufficient to sustain the city. The newly established Military Air Transport Service (MATS) immediately sent additional C-54s to theater to help in the lift, but the most significant action taken by MATS was in who they sent. At the request of the Joint Chiefs of Staff, MATS sent the most sophisticated military airlift thinker about the role of military airlift in national defense. They sent Major General William H. Tunner, the architect of the "hump" airlift.

The first thing General Tunner did was to view the operation in Berlin and attempt to find inefficiencies in the process. Through careful airspace and time management, he was able to orchestrate the air piece of the resupply to ensure that airplanes landed in Berlin at 3 minute



intervals. The next area General Tunner tackled was ground operations. He noted that while the ground crews were quick, precious time was lost while the aircrew was checking weather, in base operations, or the snack bar. He thus instituted a procedure whereby all applicable services met the airplane so the crew stayed with their aircraft the entire time it was on the ground. General Tunner also brought in time-motion experts to squeeze better turnaround time out of the ground crews. The changes instituted reduced the turnaround time of an aircraft in Berlin from 60 minutes to 30 minutes.<sup>6</sup>

During the entire airlift, American diplomats were working to end the blockade. They had little success, since the Soviets were positive airlift would fail. However, the success during the winter of 1948-49 began to break the Soviets resolve and the "Easter Parade" completely destroyed it. As a "show of airlift force," General Tunner wanted to demonstrate an all out maximum 24 hour effort. His goal was one completed mission for every minute in the day, 1440. This would happen on 16 April 1949, the Easter Parade. He didn't reach that goal, but with 1,398 completed missions and 12,941 tons of food, coal, and other supplies, the Soviets knew the blockade was a failure. The blockade was officially ended on 12 May 1949, with flights continuing until 30 September 1949 just to make sure the blockade wasn't reinstituted. All in all, a total of 2,325,509.6 tons of food and supplies were delivered in the 15-month period as well as 227,655 passengers transported.

The significance of including the Berlin airlift in a discussion about our Air Forces ability to support 21<sup>st</sup> Century strategic airlift demands is foundational. The Berlin airlift affected Air Force doctrine. It demonstrated that virtually any amount of cargo could be moved anywhere in the world with little concern for weather or geography, if properly supported.<sup>7</sup>

#### VIETNAM: COMING OF AGE

As early in Vietnam as 1964, President Johnson used the deployment of C-130s and KC-135s as a show of force. The final numbers for airlift during Vietnam were impressive. Approximately 2 million tons of material and two million passengers moved between the United States and the theater of operations. Although sealift moved a far more significant amount of supplies, what is important to note about airlift's contribution is that it was immediately available to support decisions made by United States leadership. This was apparent in the reopening of Takhli Air Base in Thailand in April 1972. When the North Vietnamese launched their spring 1972 offensive, United States leaders determined existing forces weren't enough and that Takhli Air Base needed to be reopened. The call came to the Military Airlift Command (MAC) to bring in people and supplies to man the base with F-4s and F-105s. In the nine days of Operation

Constant Guard, C-5s and C-141s moved 1,600 tons of cargo and 3,195 airmen from Holloman Air Force Base New Mexico to Takhli Air Base. In addition, C-5s delivered 26 tanks on 10 flights to Da Nang. The combination of airlift and tankers did exactly what military leaders wanted, rapid reinforcement of in-theater forces, thwarting the enemy's plans. General Clay, then commander of the Pacific Air Forces, observed:

I think probably the most significant change in airpower over the last 25 years...is this complete flexibility and our capacity to respond at a moment's notice. If anybody had told me 25 years ago that you could take a fighter wing out of Holloman Air Force Base, New Mexico, and have it overseas in less than a week and have it flying combat, I'd have said "You're nuts!"<sup>8</sup>

Vietnam was a revolutionary period for United States mobility forces. The United States learned valuable lessons about force enhancement through air refueling, intra and inter theater airlift. These lessons enabled the United States military to organize mobility forces into a coherent force and dynamic team that supports United States policy and strategy anywhere in the world.

#### DESERT STORM AND THE EMERGENCE OF CRAF

Our first true full mobilization, to include the activation of the Civil Reserve Air Fleet (CRAF), happened during Desert Storm. General Hansford T. Johnson, Military Airlift Command Commander, described the mood of airlift customers as one in which "everybody wanted to rush off to war."<sup>9</sup> This urgency of the crisis put a strain on the Defense Transportation System, but the air mobility forces met the challenge. There were however two differences in this crisis.

This would be the first time the airlift requirement was so great that organic military lift, as well as volunteer airlift from the civilian industry, couldn't meet the demand. For the first time in its 39-year history, the CRAF was activated. All in all, civilian air carriers flew more than 5,000 missions.<sup>10</sup> The second difference was the use of mobilized forces. When all was said and done, more than 22,000 Air Reserve Component (ARC) men and women, more than 60% of all Air Force reserve personnel called up, augmented to Military Airlift Command missions. By the end of Desert Storm, all seven reserve C-5 squadrons and 11 of 15 reserve C-141 squadrons were activated.<sup>11</sup> The final tally for Desert Storm was 543,548 tons (over 1 billion pounds) of cargo and 500,720 passengers moved by strategic airlift in 215 days.<sup>12</sup>

## **THE CHANGING WORLD**

If there is one lesson that these previous examples can teach us, it's that the United States military will always find a way to move the force in time of crisis. We will always find the more efficient way to perform a task. Whether it is time and motion studies in post World War II Berlin, air refueling to extend the range of our strategic as well as tactical aircraft, or the sheer brute force of moving people and equipment over time, the United States military has completed the mission. However, that mission is changing. We don't have the luxury of an adversary who only cuts off ground transportation or of the enemy who waits patiently for 6-months to allow us to mass combat power. Today's adversary is quick, and undefined. Anti-access and weapons of mass destruction are a concern. Our military will become more expeditionary in nature and more dependent upon responsive resupply and support.<sup>13</sup>

## **THE AIR MOBILITY SYSTEM**

Our present air mobility system is the product of decades of refinement. This includes doctrinal, operational, and technological innovations and advances. Post World War II development of the airlift system has been a cooperation between civil and military systems to meet the demands of our military to move around the globe. To guide military planners as to the capability and requirements of the airlift system, they have been using a standard of lift needed to move a certain number of Army divisions and Air Force squadrons a given distance over a given time.<sup>14</sup> General Hap Arnold, in 1945, said that the post war airlift system should have ample resources to move an Army Corp anywhere in the world in 72 hours.<sup>15</sup> Moving into the 1950s, the Army's stated requirement was for enough aircraft to lift the tactical elements of an airborne corp in an intratheater airborne operation and to move a single division by air anywhere in the world.<sup>16</sup> The requirement had grown again and by 1956 the Army's stated requirement was the movement of the combat elements of two infantry divisions weighing 11,000 tons each anywhere in the world in 28 days.<sup>17</sup> Despite the Army's stated needs, the Air Force concentrated on sizing and equipping the airlift force for support of the Strategic Air Command in the 1950s and 1960s and of supporting a central European NATO operation until the fall of the Berlin Wall.

Airlift planners have progressively worked with the "closet syndrome", that is, no matter how much capability they create, there is always demand for more. Trying to figure out how much of what specific type of airlift aircraft is needed is a dynamic problem with no single solution. This is due to the ever-changing requirement. In addition, transport aircraft must always compete with other "big-ticket" items in the Air Force budget, such as fighters, bombers,

and space-based systems. Generally, these other systems have had a higher priority and airlift typically gets funded when there is a major shift in requirements or the airlift fleet is decrepit. However, the airlift fleet will never get funded to worst-case war plans.

Airlift policy is not set by any specific formula, but is a conglomeration of at least three factors; high demand, fleet structure, and budget. Since there will never be enough money to build the airlift fleet in the numbers needed to fully fulfill the requirement, the focus of airlift policy then becomes to acquire the largest and most generally capable fleet within the existing budget. This doesn't imply that we should not study our current airlift requirements. A recently completed study, Mobility Requirements Study-2005 (MRS-05), identified our current shortfall of airlift at approximately 10%. The previous MRS completed in 1992 expressed the tension between what is needed and what is actually funded: This mobility requirement is based on accepting no more than moderate risk to the attainment of United States objectives. The moderate-risk capability might not be adequate to support these objectives in some worst case scenarios. The forces recommended by the commanders of unified commands normally are based on low-risk requirements and can require significantly more mobility assets than are on hand or programmed. In addition, the moderate risk capability cannot handle a second, concurrent major regional contingency beginning sequentially...However, the moderate-risk requirement yields a strategically prudent force that is fiscally responsible.<sup>18</sup>

To mitigate the risk outlined above, the United States has adopted the two near simultaneous Major Theater War (MTW) scenario. That is, one major theater war with a delay of a certain amount of time prior to an MTW in a second theater. This scenario allows for the primary use of the majority of our airlift fleet to service the first theater while ships, who do the real "heavy" lifting, are loading out and steaming to the theater. After the main effort for the first theater is promulgated, the majority of airlift can swing to service the second theater.

#### TENETS OF AIRLIFT POLICY

Back in the early 1930s when airlift planning was in its infancy, military and civilian planners had to reconcile the reality of low budget priorities, expensive aircraft, and high demand. They came up with four tenets of airlift that survive today.

The primary tenet of airlift for the United States is that the commercial airline fleet is the heart of the national airlift fleet. The military can never procure enough organic airlift to fill the requirement and it makes sense to partner with industry. If at all possible, cargo and personnel should be moved on civilian carriers. In the mid 1980s, MAC planners estimated that reserve airlift capacity was six to eight times less costly to maintain in the Civil Reserve Air Fleet than in

the military fleet. A study by the Rand Corporation in 1990 also concluded that the costs for CRAF was a fraction of those incurred should we maintain the same capability in the organic fleet.<sup>19</sup> There is however a limitation to CRAF. Over the years, the Army's requirements for movement have increased exponentially, not only in total requirement, but also in over and outsized cargo. Civilian airliners simply are not built to maximize lift of this type equipment. Most military transport aircraft are high wing, and built low to the ground, with wide fuselages. This facilitates easier loading because the aircraft is lower to the ground. The support requirements are less and you can fit larger pieces of equipment on aircraft specifically designed for the military. On the other hand, most civilian airliners are low wing with narrow, low fuselages, and tall landing gear. What this does in essence is limit the size of individual pieces of equipment that can be loaded as well as require the support equipment to raise a load higher off the ground to get in the airliner. These are not "show-stopper" limitations, but do limit the flexibility of what can be carried on the civil carriers and what material handling equipment (MHE) is needed at off load and on load location.

Our current policy also limits the use of CRAF. Stage I of CRAF, or about 10% of the CRAF capability, requires the Commander of United States Transportation Command to activate. Subsequent stages require authority from the Secretary of Defense. Airlift planners are reluctant to plan for CRAF in anything other than a low to permissive environment. It is generally assumed that CRAF carriers will not accept moderate risk to their aircraft or crews. This was borne out in a Rand study following the Gulf war. The study reported that morale suffered and volunteerism fell in some CRAF companies in the face of SCUD missile attacks on Riyadh and Dhahran.<sup>20</sup> CRAF was established with the foundation of voluntary contracts, and it is these contracts that limit the government's ability to send civilian crews into harms way. There have also been efforts on the military's part to better equip civilian carriers to carry the odd military loads. Congress and the military failed several times to encourage or finance the development of civil-military transports. The aforementioned design differences between pure military airlifters and civil carriers doomed any such program, however, before the program died there was procurement of 21 cargo-enhanced 747s and two DC-10s. Currently the military is pursuing another avenue to fill the void in civilian carriers of being able to carry over and outsized cargo. The USAF is lending assistance to Boeing, the maker of the C-17, in marketing the aircraft to civilian carriers.<sup>21</sup> If this partnership between civilian carriers and Boeing for the C-17 did take place, the USAF would gain a twofold benefit. There would be a unit cost savings on future buys and the military would have access to a civilian aircraft capable of carrying out and oversized cargo.<sup>22</sup>

The inability or inflexibility of the civil carriers to provide all required military lift prompted the second tenet of airlift policy. The role of the military component of the airlift fleet is to do what commercial transport aircraft or civilian aircrews cannot or will not do. Military leaders for a long time have recognized that military airlifters were justified when they were needed to support requirements which because of their nature or the nature of the mission to be supported must move in military operated aircraft.<sup>23</sup> These so called “hard-core” missions have been identified as classified missions, critical missions in the first phases of an emergency, tactical combat such as airdrop missions, operations into airfields not big enough or improved enough for civilian airliners, and missions with loads too big or bulky to be carried on airliners. Because most major war plans require these types of missions, the need for organic airlift will always be assured. However, the size and composition should be based on complementing the civilian carriers, not preempting them.

Tenet three is that the military should be equipped with aircraft specifically designed for its role. This tenet is primarily responsible for the difference in design of military transport aircraft. Military transports should be capable of airdrop missions, moving people and equipment in austere, forward airfields. Hence, you get the shorter, wider cargo compartments along with reinforced floors. Military transports typically have cargo ramps and doors as well as being built low to the ground to facilitate roll-on/roll-off cargo. It makes fiscal sense to only equip the military with these specialized aircraft that typically have no mass appeal in the commercial sector. At best, they are used for niche markets in the commercial arena.

The last tenet that military airlift planners have been using for decades is; airlift operations represent a continuum that should be under the operational and administrative direction of a single command. This tenet took shape in 1948 when Secretary of Defense James E. Forrestal consolidated the Army’s Air Transport Command and the Navy’s Naval Air Transport Service into Military Air Transport Service or MATS, the precursor to today’s Air Mobility Command. In 1956, a DoD directive placed virtually all-remaining airlift under the direction of MATS, which then became DoD’s single airlift manager.<sup>24</sup>

## SIZING THE FORCE

In the recent past, our policy for the sizing and structure of the mobility forces has been driven by the requirement for the 2-Major Theater War near simultaneous scenario.<sup>25</sup> The strategic airlift fleet was molded to cover this scenario. However, the number and scale of small-scale contingencies (SSC) throughout the 1990s highlighted a major flaw in this policy.<sup>26</sup> It was thought that most airlift would flow through a limited number of hubs to support the 2-

MTW scenario. The size of the C-17 fleet was adjusted to support this premise, with an initial buy of 120 airframes. The projected C-17 fleet is half the number of the C-141s it replaces but carries roughly the same amount of cargo, that is when you take into account the number of 463L pallets that the total fleet can carry. The C-141 has positions for 13 pallets. With a fleet of approximately 250 aircraft, that was a capability of 3,250 pallet positions. Contrast that with the C-17, which can carry 18 pallets and an initial buy of 120 airframes, that gives you 2,160 pallet positions. The United States Air Force has recently increased the buy of C-17s to 180. With the increased aircraft, that will increase the pallets carrying capability of the C-17 fleet to 3,240. While this gross lift capability is about the same as the C-141 it replaces, the flexibility afforded by a greater number of airframes is lost. This requires us to be extremely efficient in our use of this national resource. The problem we run into with a multiple small scale contingency type of scenario is loss of flexibility, we can't take advantage of the major hub type of operation due to the numerous and unimproved condition of the areas the contingencies fall, so we end up dispersing our fleet, thus highlighting the weakness of too few airframes.<sup>27</sup> A recently completed Joint Staff sponsored study outlined the need for additional airlift. Mobility Requirements Study 2005 was undertaken by the military to assess our needs for airlift in the year 2005. MRS-05 was sent to Capital Hill in January of 2001. It concluded that under our current policy of 2 near simultaneous MTWs, our airlift requirements would be 54.5 million-ton miles/day (MTM/D).<sup>28</sup> That is, 5,450 tons across 10,000 nautical miles per day. This is broken down by airframe in the following figure 1.

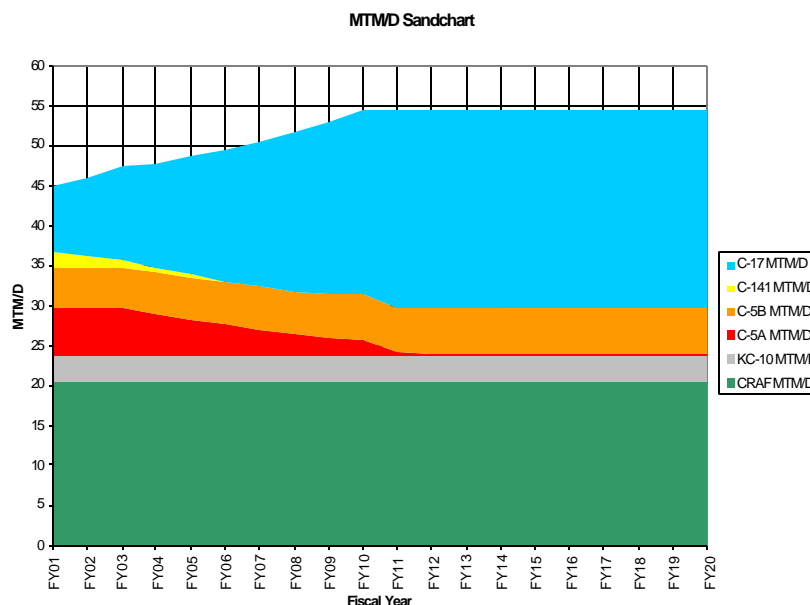


FIGURE 1

This equals an amount that is the “minimum moderate risk capability to support the national military strategy.”<sup>29</sup> Our current capability is about 10% short at 49.7 MTM/D according to USTRANSCOM, but the GAO says the shortfall is actually 29%.<sup>30</sup> Former Air Force Secretary F. Whitten Peters warns, “It is clear to me, that expeditionary operations, as planned by the Air Force and now as planned by our sister services, are going to require more strategic airlift.”<sup>31</sup> Something must change.

Strategically, time and space are relative, and as the history of war has shown again and again, a handful of men at a certain spot at a certain hour are frequently a far more powerful instrument of war than ten times the number on the same spot twenty-four hours later.

—J.F.C. Fuller

## STRATEGIC AIRLIFT CUSTOMERS

During any contingency, large or small, all players will be fighting for their piece of the airlift pie. However, the true user of the majority of lift early in a contingency is the Air Force itself. The relatively recent shift in our Air Force to an expeditionary force has increased the need for rapid deployment of support systems. The Air Mobility Command (AMC) has reduced its number of enroute facilities (that is, those AMC sites that are geared towards worldwide deployment with the capability to permanently handle a large number of strategic airlift assets) from almost 40 worldwide to less than 15. A propensity of the strategic airlift needed during a major deployment and well as about 3-4 days time will be used to move temporary enroute assets into place. Air refueling assets will be tied up in moving fighter assets into the theater of operations through ‘fighter drags’. Strategic mobility is a force enabler, and supports contingencies through air refueling, airlift, Global Reach Laydown (GRL), base operating support (BOS), and Expeditionary Combat Support (ECS).

The major customer, once the initial deployment structure is in place, is the United States Army. The Army realizes how precious and finite airlift is and has identified as one of its keys for transformation a lighter more easily deployable force. The Stryker Brigade Combat Team (SBCT) structure is the first step towards that lighter more easily deployable force which maintains lethality. The Army Chief of Staff has stated time and again the Stryker combat vehicle, the heart of the SBCT, must be C-130 deployable, that is, be able to fit in a C-130 for combat loaded movement. The IBCT [precursor to the SBCT] will provide rapid deployment anywhere in the world within 96 hours, a full division in 120 hours and five divisions on the ground within 30 days.<sup>32</sup>



## **CURRENT DEPLOYMENT CHALLENGES**

### **THE ARMY'S ROLE**

Army transformation is a sweeping program to boost the Army's capabilities and fundamentally change how soldiers fight in the future while making shifts to be ready for a battle that could break out today.<sup>33</sup> This is an overarching concept, but what does it really mean? What are the basic tenets of Army transformation. Army Chief of Staff General Shinseki has put a few marks on the wall; the ability to put a combat capable brigade anywhere in the world in 96-hours, a full division in 120 hours and five divisions in 30 days.<sup>34</sup> The basic fighting unit is the Stryker Combat Teams. Formed around C-130 transportable equipment with minimal reception, staging, onward movement and integration. These units are ready made for deployment for SSCs. This piece of transformation is focused around "legacy" forces. These will be the make-up of the lighter, more deployable Army until fielding of the Future Combat System (FCS) in 2007/8.

While the idea of a lighter C-130 transportable vehicle seems to be one answer to our lack of airlift, the problem lies in that the Army will continue to have "heavy" pieces of equipment and the requirement timeline to move an Army fighting force has been accelerated. In addition, while a Stryker vehicle may fit into a C-130, because of its weight (19 tons), it can only be moved, at best, about 600 nautical miles by a C-130. The requirement for C-17s and C-5s are still valid for the strategic movement of these vehicles. The Army's idea is to use the lighter vehicle in place of the 68-ton Abrams tank. But, the Army's transformation to a lighter, faster force means more airlift missions, not fewer.<sup>35</sup> According to an Army transportation officer on the Army's logistics staff, "Without increased airlift, it's going to hinder our ability to achieve the Army vision (rapid deployment)."<sup>36</sup>

### **COMPETING FOR LIFT**

When a commodity is scarce, there is inevitably a fight to see who gets the most and who gets it first. Airlift is no different. There is already great friction over the apportionment of lift. Prior to the 2001 Quadrennial Defense Review being published, numerous position papers were written and distributed. In one, John Kreul, an analyst with the Institute of Land Warfare complained that the Army was unfairly labeled too slow and heavy to be relevant.<sup>37</sup> In fact, Kreul concluded that the Air Force hogs all available lift when a crisis erupts. He says that the Air Force consumes 70% of the lift for the first 10 days.<sup>38</sup> This however, was not borne out during the Balkans. The Army's Task Force Hawk, a small force requiring lift from one part of

Europe to another, required 542 C-17 missions. In contrast, it is expected that the deployment of an F-22 squadron with significantly greater firepower, would require only 6 C-17 missions.<sup>39</sup> Many other Army units, not part of the new Stryker brigades, still require a significant amount of airlift. A patriot Air Defense Battalion requires 98 C-17 missions to deploy.

The Air Force does however, require up-front lift during a contingency. Due to our policy of reduced forward presence, our enroute structure has been severely scaled back. In the first few days of a contingency, the preponderance of available lift will be busy positioning Air Force support forces forward, to include air refuelers, in order to support the deployment of follow on forces. The Air Force has been looking for ways to find efficiencies in deployments also. General Michael Ryan, while he was Air Force Chief of Staff, reported that the Air Force had been able to reduce by 22% the number of airlift sorties required to move the Aerospace Expeditionary Force.<sup>40</sup> The Army and Air Force are not the only services relying on airlift. The Marines rely on strategic airlift to move their non-expeditionary forces to the fight also. Former Marine Corp Assistant Commandant General Terrence Dake doesn't want the Marines to be left out of the airlift puzzle. In a statement to reporters, he says that the enthusiasm for expeditionary forces is "the right thing to do for the nation," but that getting expeditionary forces out will have to be a balancing act between "expeditionary [forces] and that which is heavy-hitting combat power [i.e., the Army], and all the things you bring in-between."<sup>41</sup> The Marines are an enabler for follow-on forces and deserve their fair share of lift too.

#### AIRCRAFT CAPABILITY

The United States' ability to get to and fight our nation's conflicts is heavily vested in older aircraft and one newer airframe. On the strategic airlift side, we rely on basically three airframes; the C-5, the C-141, and the C-17.

The C-5 is capable of carrying oversize and outsize cargo. The C-5 is a major player in any deployment scenario however has been plagued by low reliability rates for years. Air Mobility Command has struggled to maintain a reliability for the C-5 above 60%. There are however, numerous upgrade programs in place to increase the reliability and push it up to the desired 75%. The major solutions for the C-5 are the Avionics Modernization Program (AMP) and the Re-Engining Program (RERP). The AMP will allow the C-5 to comply with global navigation requirements to allow flight in the most restrictive and most efficient airspace. The re-engining program is a comprehensive program to improve reliability, maintainability, and availability by replacing historically "bad-actor" systems with modern reliable components.<sup>42</sup>

The C-17 is the nation's core airlifter and is the C-141 replacement. It has been in the inventory since 1993 and has a historically high reliability rate. The C-17 buy has recently been increased from 134 to 180, which meets the baseline for the MRS-05 study.

Air Mobility Command along with the Office of the Secretary of Defense just completed the Tanker Requirements Study 2005 (TRS-05). This was a comprehensive study of the ability of our current tanker fleet to support the National Military Strategy of 2-near simultaneous MTWs. The results of this study can be applied to any current existing strategy based on the mission performed. As such, the results are applicable to a multiple SSC scenario. The finding shows that during the deployment phase of an operation, the constraining factor is the fuel offload capability. While during the employment phase, the shortfall was identified as the number of aircraft/booms available to refuel combat and combat support aircraft.<sup>43</sup> The shortfalls were identified in both aircrews and number of aircraft but did suggest some workarounds, however, not without added risk to the warfighter.

The KC-10's primary mission is air refueling during all phases of conflict. The KC-10 does have an inherent airlift capability and is capable of simultaneous air refueling and cargo missions. The 59 KC-10s represents about 10% of our tanker fleet.

The KC-135 represents about 90% of our air refueling fleet and also has a limited cargo capability. The KC-135 is currently going through a modernization program but there are currently no plans to increase the inventory of either the KC-10 or the KC-135. The Air Force is currently in negotiations with Boeing Aircraft to potentially buy or lease up to 100 B-767s and modify them for air refueling missions. No decision on this has been made.

The Civil Reserve Air Fleet is a vital piece of the strategic airlift puzzle. MRS-05 looked extensively at our CRAF program to determine the health of the program. Due to infrastructure limitations and the inherent limitations of the civilian aircraft, there is a limit to the capacity that CRAF can move. MRS-05 has determined that this is 20.5 MTM/D (120 B-747-100 Wide Body Equivalents (WBE)) in any single theater.<sup>44</sup> This infrastructure limitation is due to extra MHE requirements and the lack of flexibility for unimproved and short runway operations. CRAF participation in a specific theater above this level may even reduce the ability to move cargo through the theater because it would limit the organic lift's ability to move over and outsize cargo. As mentioned earlier, there are also limitations on CRAF flying some special missions and also into chemically contaminated theaters. CRAF will provide 93% of the passenger movement for the 2 nearly simultaneous MTW scenario, with a single theater requirement of 136 B-747-100 WBE.

Victory is the beautiful, bright colored flower. Transportation is the stem without which it could never have blossomed.

—Winston Churchill

## SUMMARY

Strategic air mobility plays a key role in ensuring our National Security Strategy is successful. Transportation is critical to our ability to conduct rapid and precise operations worldwide. SSCs appear likely to increase in frequency and will certainly become more challenging.<sup>45</sup> Sizing of our force will most assuredly be based on this premise. This raises the need for increased flexibility and numbers of airframes for our mobility forces as well as infrastructure improvements in key hubs around the world.<sup>46</sup> General Handy, Commander of Air Mobility Command, has published his “Flight Plan,” or his strategic vision for Air Mobility forces. This vision is meant to support our National Strategy as well as our military’s transformation. In talking about the Global Mobility Task Force he states that it is “the future of air mobility support to warfighters: Accelerate deployment of combat power to any theater, project/sustain forces swiftly/efficiently.”<sup>47</sup> The United States Air Force has recently increased its buy of C-17s to 180. This increased flexibility is a major factor in the US being able to support airlift for our new policy of multiple SSCs, however, experts believe that the final number of C-17s needed to support the policy is 222.<sup>48</sup> Currently our ends, ways, and means are not in balance. Mobility Requirements Study-05 and the GAO audit of this study both show a shortfall of airlift. The major risk involved in this shortfall is a lack of flexibility, that is, our ability to adequately support multiple SSCs in different regions. What this means is increased deployment time, not being able to meet the Army’s Stryker Brigade Combat Team deployment timelines. As far back as 1963, the Air Force has been discussing the pressure that multiple contingencies have put on the airlift system when then Chief of Staff of the Air Force General Curtis LeMay testified to congress that the inclusion of limited war and counterinsurgency wars as airlift planning factors had created an airlift deficit, primarily because “Army airlift requirements continue to grow.”<sup>49</sup> Airlift planners have always recognized the need for a ‘mixed’ fleet of aircraft types and the C-17 was meant to be a swing airframe. A sort of combination strategic/tactical airlifter.

The only way to reduce the strain on our airlift system is to reduce our worldwide commitment. That is not likely to happen. The Air Mobility Command aircraft on the ground in a foreign country is as visible a sign of United States presence as a Carrier Battle Group in port, for as Former Chief of Staff of the Air Force General Ronald Fogleman said, “I have traveled around the world and talked to people in different countries. I can tell you that when that big “T”

tail aircraft lands, with the American flag on the tail, they not only represent America - they are America.”

## **SOLUTION FOR THE FUTURE**

What to do then? There are many ideas for increasing our ability to deploy; floating islands, super-airlifters, and blimp-like airships. These are just a few of the systems being looked at in the Advanced Mobility Combat Study undertaken by the Army's Logistics Directorate, but they are looking at the 2015 timeframe.<sup>50</sup> The one clear choice is to continue to funnel money to C-5 upgrade and modernization and increase the C-17 buy to 222+ airframes. This will give us greater flexibility for the multiple SSC National policy. Another mindset shift would be in how we plan to use the C-17. When it was initially bought, it was touted as an airlifter that could move equipment from the “fort to the foxhole.” In other words, cargo could be loaded at home station, and through air refueling, be delivered direct to the battlefield. A more efficient use of airlift would be to use the C-17 in a mini-strategic role. That is, use CRAF and C-5s to move as much as possible over the long strategic distance, i.e., CONUS to the Middle East, or CONUS to the Pacific. Then use the C-17 to cover the final distance direct to the battlefield. The airlift planners of the United States Air Force have relied upon four tenets for decades. Now, more than ever, is the time to adhere to those tenets. The civil sector is the backbone of our nations airlift capability, it is time to rely on them. The use of CRAF in lower levels of activation (CRAF Stage I) on a more constant basis will allow for continued refinement of the CRAF contracts as well as freeing up critical organic airlift assets to fly into unimproved or hostile areas. Another benefit of using CRAF more is the possible reduction of OPSTEMPO for our strategic airlift force. Civilian carriers doing more of the strategic lift would free up organic aircraft for maintenance, and crews for home station training (ground and flying). In the past, we have been reluctant to force the commercial sector to support our lift requirement. This has been due to the second and third order effects resulting from CRAF activation. There is a myriad of consequences for the United States associated with activating CRAF. The immediate effect is that any airframe dedicated to mobility requirements through activation is one less revenue generating airframe in the passenger system. This has tremendous economic impact on the airlines. The disruption to passenger routes would be one that would cause hardship to not only the carriers, but the U.S. public as well. This is a disruption that can be weathered for a short period of time, or for a popular contingency, but would wear thin in a protracted conflict. There is also the possibility that if used extensively, the civilian carriers may choose to not renew their CRAF participation. These are challenges we should work aggressively to

circumvent. But, this may very well be an opportunity to permanently increase CRAF participation in global strategic airlift, thus allowing them to dedicate airframes exclusively to military missions. A side benefit of this may be the procurement of additional aircraft to their fleet and another avenue of revenue, sorely needed in the airline industry downturn. In fact, we have only called upon CRAF activation once...DESERT STORM. We have relied upon volunteer participation. Civilian airliners could be used to move a bulk of the cargo to a major airport closer to the battlefield where we could cycle C-17s in a long-range tactical airlifter role or the aforementioned "mini-strat" role, thus increasing the sortie rate for the C-17. While it may seem odd for the civilian carriers to pick up a significant amount of strategic lift while our organic lift possibly reduces tempo, this would be in accordance with the 1987 National Airlift Policy which reinforced the United States military plan for using commercial airlines wherever suitable and feasible. The policy is to fly military aircraft during peacetime the minimum necessary to maintain military readiness and training and to rely on civil carriers to meet the remaining airlift requirements where possible.<sup>51</sup>

Shifting the way we think about commercial participation as well as aircraft modernization and buying more C-17s will not eliminate our airlift shortfall, but will greatly improve the scenario until we explore more unorthodox options.

It is not the strongest of the species that survives, nor the most intelligent, but rather the one that is most adaptable to change.

—Charles Darwin

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## ENDNOTES

<sup>1</sup>George W. Bush, The National Security Strategy of the United States of America (Washington, D.C.: The White House, September 2002), 16.

<sup>2</sup>Roger D. Launius, "Post-World War II Priorities and the Berlin Airlift," in Air Mobility Symposium 1947 to the Twenty-First Century (U.S. Government Printing Office, 1998), 31.

<sup>3</sup>*Ibid.*, 32.

<sup>4</sup>Keith Hutcheson, Air Mobility The Evolution of Global Reach (Vienna, VA: PointOneVII Inc., 1999), viii

<sup>5</sup>Launius, 34.

<sup>6</sup>*Ibid.*, 40.

<sup>7</sup>*Ibid.*, 42.

<sup>8</sup>Hutcheson, 14.

<sup>9</sup>*Ibid.*, 24.

<sup>10</sup>*Ibid.*

<sup>11</sup>*Ibid.*

<sup>12</sup>*Ibid.*

<sup>13</sup>Air Mobility Command, Air Mobility Strategic Plan (Scott AFB: Air Mobility Command, October 2001), 2.

<sup>14</sup>Lieutenant Colonel Robert C. Owen, "The Airlift System, A Primer," Air Power Journal (Fall 1995): 3.

<sup>15</sup>General Henry H. Arnold, Commander, Army Air Forces, to Lieutenant General H.L. George, Commander, Air Transport Command, letter, 5 December 1945.

<sup>16</sup>Frederick C. Thayer, Air Transport Policy and National Security: A Political, Economic and Military Analysis (Chapel Hill, N.C.: University of North Carolina Press, 1965), 136-42.

<sup>17</sup>Senate Committee on Armed Services, Study of Airpower: Hearings Before the Subcommittee on the Air Force, 84<sup>th</sup> Cong., 2d Sess., April 1956, 833-49.

<sup>18</sup>Department of Defense, "Mobility Requirements Study," vol. 1, "Executive Summary" (Washington D.C.: Department of Defense, 1992), ES-4 and -5.

<sup>19</sup>Owen, 6.

<sup>20</sup>*Ibid.*, 7.

<sup>21</sup>John A. Tirpak, "The Airlift Shortfall Deepens," Air Force Magazine (April 2001): 4.

<sup>22</sup>Ibid.

<sup>23</sup>Owen, 8.

<sup>24</sup>Richard I. Wolf, The United States Air Force Basic Documents on Roles and Missions (Washington D.C.: Office of Air Force History, 1987), 173-78.

<sup>25</sup>Lieutenant Colonel Greg Cook, "Air Mobility at the Crossroads," Airlift/Tanker Quarterly (Summer 2001): 9.

<sup>26</sup>Ibid.

<sup>27</sup>Ibid.

<sup>28</sup>Seena Simon, "Lighter, Faster Forces Depend on Successes of Air Force Airlift Makeover," Army Times (29 January 2001): 16.

<sup>29</sup>John A. Tirpak, "A Clamor for Airlift," Air Force Magazine (December 2000): 26.

<sup>30</sup>Simon, 16.

<sup>31</sup>Ibid.

<sup>32</sup>David Jablonsky, "Army Transformation: A Tale of Two Doctrines," Parameters 31 (Autumn 2001): 46.

<sup>33</sup>Dennis Steele, "The Army Magazine Hooah Guide to Army Transformation," Army (February 2001): 21.

<sup>34</sup>Ibid.

<sup>35</sup>Simon, 17.

<sup>36</sup>Ibid.

<sup>37</sup>Tirpak, 27.

<sup>38</sup>Ibid.

<sup>39</sup>Ibid.

<sup>40</sup>Ibid.

<sup>41</sup>Ibid.

<sup>42</sup>Air Mobility Command, Air Mobility Strategic Plan, 100.



<sup>43</sup>Ibid., 193.

<sup>44</sup>Ibid., 61.

<sup>45</sup>Ibid., 15.

<sup>46</sup>Ibid.

<sup>47</sup>General John W. Handy, "The Air Mobility "Flight Plan"," available from <https://scott.amc.af.mil>; internet accessed 7 October 2002.

<sup>48</sup>Tirpak, 26.

<sup>49</sup>Owen, 4.

<sup>50</sup>Amy Svitak, "The Future of Global Mobility," Air Force Times (2 September 2002): 8.

<sup>51</sup>Lieutenant Colonel John W. Routh, "Introduction to the Civil Reserve Air Fleet," Briefing notes, December 1996, 4.



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